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not perfectly so (witness *consols*) ; on the left hand, the same words, in the same spelling, but with various devices to show the pronunciation, such as the use of accents, acute and grave, heavy type for some letters, and smaller type for silent letters. The notation used is a new one, and the final result far from being readily intelligible. The proper course would have been to minimize the inconvenience to the user by making the left-hand column as simple as possible, using always only one sign for the same sound, and omitting silent letters altogether. If all the words are respelled solely to show their pronunciation, there is no excuse for not spelling phonetically.

NOTES AND NEWS.

THE local committee of the American association, which will hold its thirty-fourth meeting in Ann Arbor during the week beginning Wednesday, Aug. 26, announces that the general sessions will be held in University Hall, while rooms for the sectional meetings will be assigned in different buildings on the university grounds. The offices of the permanent and local secretaries and of the various committees will be established in the immediate proximity, together with an association post-office; and all letters, telegrams, and express packages bearing the letters 'A. A. A. S.' will be delivered close at hand. The university offers the use of its rooms for any lectures, or specially illustrated papers, which may be authorized by the standing committee. Sectional papers demanding experimental illustration may be supplemented by the use of the apparatus at hand. The university will furnish electricity, either from a dynamo, from a storage-battery, or from primary batteries, as may be needed by members reading papers on electrical subjects. Opportunity will also be given any member desirous of making an exhibit of apparatus, minerals, or scientific specimens of any kind, to properly display the same.

The committee is not yet ready to announce complete arrangements with the railways, but they state provisionally that over most of the lines return tickets will be furnished for one-third of the regular price to all who have paid full fare over the same line. Ann Arbor is situated on the lines of two railways, — the Michigan central, and the Toledo, Ann Arbor, and northern Michigan; and a special through train, for the exclusive use of members of the association, will be run by the former if a sufficient number desire, leaving Buffalo on Tuesday morning, Aug. 25, stopping for an hour or two at Niagara Falls, and reaching Ann Arbor in the evening of the same day. The two hotels at Ann Arbor are the Cook House and the Franklin House, where members will be accommodated at two dollars a day. A large number of rooms, with prices varying from fifty cents to a dollar a day, have also been engaged in private houses near the university grounds, where, to accommodate those

not offering board as well, a restaurant sufficient to accommodate three hundred persons at once will be established, at which, breakfast, dinner, and supper will be furnished at the uniform price of fifty cents. Private hospitality is also liberally promised by many citizens; and there is no question of sufficiency of accommodation, as most of the two thousand students who live in the city during term time will be absent on their vacation.

An evening reception on a day not specified will be given the association at the court-house, together with a lawn-party on the university grounds at the close of one of the regular sessions. The excursions committee has nearly completed arrangements for a trip, free of all expense, to the Saginaw valley, including a steamboat ride down the river, and view of the cities of Saginaw, East Saginaw, Bay City, and West Bay City, and the enormous industries in salt and lumber manufacture which have given the Saginaw valley a world-wide celebrity. This valley produces annually a billion feet of lumber, and the excursionists will see half a billion piled on the docks. In conjunction with these vast lumber operations will be seen the production of salt on a scale unequalled in the world, and employing the various improved processes. The committee has also arranged for excursions to Detroit and Mackinack Island, with side trips to Sault Ste. Marie, Pectoskey, and Marquette. Members wishing to make any special inquiries or arrangements should address Prof. J. W. Langley, local secretary, Ann Arbor, Mich.

— Matusoffski and Nikitine, well known for their travels in China and Sakhalin, have recently finished a new map of China; that is to say, of the Middle Kingdom, with the region bordering upon it. This chart is on the scale 1:4,200,000, and is the best yet issued in point of execution. Paderin, Uspenski, and Sheveleff have served as a committee on the orthography of proper names, with Professor Vasilieff as umpire in doubtful cases. It extends from the western borders of Corea to the Yung-ling Mountains, and between latitudes 16° and 45° north.

— The *Annuaire de Turkestan* for 1885 has just been issued by Messrs. Sokoloff and Lakhtin. Its contents are of unusual interest in connection with recent events, and comprise, among other things, a chronology of historical events from 1155 to 1884; a memoir on the Merv oasis and on the route between Khiva and the Caspian; notes on the Amu Daria; a description of Ferghana, of the museum at Tashkent, of the fisheries of Turkestan, and an account of public instruction in Turkestan.

— A special chair of geology has just been established in the Indiana university, and Prof. J. C. Branner of the Geological survey of Pennsylvania has been chosen to fill it. Professor Branner was for six years assistant geologist to the Imperial geological survey of Brazil. Prof. J. P. Naylor of Indianapolis has been elected to the chair of physics.

— Dr. Hermann Roskoschny has projected a series of geographical manuals on European and especially German colonization, under the title 'Europas kolo-

nien.' Under the same editor has just been issued the first part of a hand-lexicon of Africa by Paul Heichen, to comprise thirty parts, octavo, at fifty pfennige each, to be profusely illustrated, and to contain retrospective as well as actual information. It is well printed, and is published by Grossner & Schramm, Leipzig.

—A long-delayed letter from the bishop of central Oceanica gives details of the honors rendered by the civil and religious authorities to the relics of the companions of La Perouse. These last survivors of that unfortunate expedition were massacred by the Samoans on the Islet of Tutuila on the 11th of December, 1787. Father Vidal, of the mission, had been searching twelve years for the remains, which were finally identified in October, 1882. The authorities in France, on being notified, caused a beautiful mortuary tablet to be prepared, and forwarded to the admiral on duty at that station. A monument was erected, upon which the tablet was fixed, and a small chapel built near it. The whole was dedicated by Bishop Lamaze and Commandant Fournier, of the French navy, with solemn ceremonial and minute-guns on the ninety-seventh anniversary of the event.

—The Société de géographie has elected Mr. de Lesseps, the present incumbent, to its presidency for 1885-86, and Messrs. Himly and Bischoffsheim, vice-presidents.

—A portion of the work of Protestant missionaries in China, which has attracted little attention, says *Nature*, and which, nevertheless, is of great importance, is the preparation of school and text books in Chinese. For this purpose Protestant missionaries of all nationalities and denominations have united. At a general conference held in Shanghai in 1877, a committee of eight of the leading missionaries was appointed to superintend the preparation and publication of the series. The work has now been going on for eight years, and the committee are able to report that over forty works have been issued, and that thirty more are in various stages of progress. In addition, four numbers have been issued of an 'outline series' compiled with the object of supplying Chinese schools with small and simple treatises on scientific subjects at cheap rates, suitable either as elementary school-books or as popular tracts for general distribution. What 'cheap rates' mean, will appear from the fact that the outlines of astronomy costs rather less than a penny; those of political and physical geography and geology, about twopence each. The larger works embrace anatomy in five volumes, ancient religions and philosophies in three, arithmetic, charts of astronomy, birds and mammals, with accompanying handbooks (these charts, from the prices, are obviously intended for the walls of schools), chemistry, political economy, geology, universal history, international law (a translation of Bluntschli, it appears), zoölogy, and several on biblical topics. Those in preparation include treatises on various branches of elementary mathematics, botany, ethnology, hygiene, jurisprudence, logic, mathematical physics, meteorology, mineralogy, philology, and

forty wall-charts with accompanying handbooks. These works, it must be remembered, have first to be compiled with a special view to the knowledge usually possessed by Chinese children, and then to be translated, representing in each case two distinct tasks. That the missionaries in China and elsewhere have schools where they teach the young, is well known; but it will probably be a surprise to many to find, that, in addition to their ordinary labors as preachers and teachers, the missionaries in China have had to undertake a task of such magnitude as the creation of school literature on all subjects of human knowledge, from arithmetic to jurisprudence, and from anatomy to logic. The statement on this subject is taken, it should be added, from the *Chinese recorder* of Shanghai, a magazine which is itself a monument to the learning and enterprise of Protestant missionaries in China.

—The second edition of Macfarlane's 'Geological railway guide,' first published in 1879, is now in active preparation. As its advance depends on co-operation from many state geologists and others, it is of necessity somewhat leisurely; but substantial progress is marked by thirty preliminary pages, which describe the Dominion of Canada, prepared by G. M. Dawson; and, if the rest of the work is up to this high standard of detail, it will be a great improvement on its valuable predecessor. The notes are full, and serve an excellent purpose. For example: under St. Hilaire station, Grand Trunk railway, we find, "Beloeil Mountain, one of the remarkable igneous protrusions which penetrate the flat-lying Silurian rocks of the St. Lawrence valley, may be visited from this point. The mountain is partly composed of augite syenite, and partly of nepheline syenite. An excellent summer hotel on the mountain." Again, at Thorold, "Good section of Clinton and Niagara in cutting of Welland canal. Fossils. A band of argillaceous limestone eight feet thick in the Niagara yields an excellent cement."

—The ordnance survey of the United Kingdom has issued an interesting report on the progress made to the end of 1884. Scotland and Ireland have been completed, and maps of these countries on the six-inch scale have been published. In Wales, Pembroke, Carnarvon, and Anglesea alone remain to be surveyed. It is hoped that the whole of the kingdom may be finished by the year 1890.

—Professor Hermann Fol has made a most valuable contribution to the resources of the histologist through the publication of the first part of his 'Lehrbuch der vergleichenden mikroskopischen anatomie,' —a treatise which ought to be in the hands of every morphologist and microscopist. The first part is entirely devoted to technique, and is so thorough and exhaustive, and done with so much critical acumen, that it surpasses all its predecessors. Sensible and practical directions for the use of the manifold instruments and operations of the histologist are given. The author has added also many valuable explanations and criticisms, and describes a number of new implements and methods devised by himself.

The present part contains the latest methods, and cites the literature very fully, and may be bought separately by those who wish. Part second will treat of the cell and the structure of unicellular animals; part third, of the ectoderm and its derivatives in the metazoa; part fourth, of the entodermal and mesodermal organs, — the whole to make a volume of some six hundred and fifty pages.

— According to the *Colonies and India*, Baron F. von Müller, K.C.M.G., has issued, under the auspices of the Victorian government, a second supplement to his systematic census of Australian plants. It appears from the information now published, that, whilst the known plants of Australia and Tasmania are about 9,000, they occur in the following proportions in the respective colonies: viz., western Australia, 3,455; Queensland, 3,457; New South Wales, 3,154; northern Australia, 1,829; Victoria, 1,820; South Australia, 1,816; and Tasmania, 1,023. The progress of botanical discovery in Australia within the last quarter of a century has been very marked; and the colonies are mainly indebted to Baron Müller for this result. He, with the late Mr. Bentham, prepared and published the seven volumes of the '*Flora Australiensis*.'

— Dr. Fischer, who lived for seven years as a doctor in Zanzibar, has published a book on the colonization of tropical Africa, called '*More light on a dark quarter of the world*;' also a report of his journey from Pangani to Lake Naewascha, undertaken for the Hamburg geographical society.

— According to *Nature*, the British consul at Leghorn, in his report for the past year, makes some interesting observations on coral in the Mediterranean. Some centuries back the Mediterranean coral fisheries were carried on exclusively by the Spaniards, and the principal establishments engaged in the manufacture of coral ornaments were in the hands of Jews residing in Spain. Towards the close of the sixteenth century, to escape the persecutions to which they were exposed, a large number of these merchants removed to Leghorn, in order to enjoy the secure asylum afforded by the liberal enactments of Ferdinando di Medici. Crews were obtained from the Neapolitan coast, principally from Torre del Greco: hence this place, at an early period, became the chief seat of the coral fishery; and most of the boats engaged in it are still fitted out at that port, although the manufacture of coral ornaments and beads is carried on principally at Leghorn and Genoa. These ornaments are met with in almost every part of the world; and in many countries, even in Europe, coral is believed to be possessed of a peculiar charm. In Asia and Africa it is regarded with a sort of religious veneration, while in India it is largely used for the adornment of corpses when prepared for cremation. But the present situation of the coral trade is disastrous. In 1880, a coral bank several kilometres in length was discovered near the island of Sciacca, on the coast of Sicily, and consequently the yield of raw material has been far in excess of the demand, and the reef is still very far from being exhausted. A

great depreciation in value has ensued, and, as a consequence, an extensive trade has sprung up in coral with Africa, where the natives now purchase coral ornaments in place of glass beads of Venetian and German manufacture. The raw coral comes from Naples, and is worked at Leghorn by women into beads, British India and Egypt being the chief customers for them.

— Mr. Shelford Bidwell has read a paper before the Royal society, on the changes produced by magnetization in the length of rods of iron, steel, and nickel. He finds that the length of an iron rod is increased by magnetization up to a certain critical value of the magnetizing force; and, if that is passed, the elongation is diminished in proportion as the magnetizing force increases. The amount of the maximum elongation appears to vary inversely as the square root of the diameter of the rod. In soft steel, magnetization produces elongation; and, with hard steel, the critical value of the magnetizing force becomes very high. In soft steel a temporary elongation, once produced, may be maintained by a magnetizing force too small in itself to produce any elongation. Nickel continues to retract with magnetizing forces far exceeding those which produce the maximum elongation of iron. The greatest observed retraction of nickel is more than three times the maximum observed elongation of iron, and the limit has not yet been reached.

— Prof. H. A. Hazen has prepared a signal-service note (no. xx.) on the thunder-storms of May, 1884, in which he gives a brief statement of the results obtained from the volunteer observations on these storms, gathered on special cards from persons in all parts of the country. It is illustrated by maps for May 18 and 19, showing the advance of the thunder-storm area for these days. The conclusions presented are, 1°, hail-falls occur ordinarily with a pressure much below the normal, and in a position two or three hundred miles south-east of the centre of barometric depression (cyclonic centre); 2°, thunder-storms advance from west to east and south-east, generally accompanying a cyclonic depression in its south-east quadrant, four or five hundred miles from the centre; 3°, their action seems to die down at night, and begin again in the morning, and often spreads in a fan-shape to south-east and east; 4°, the velocity of the thunder-storm's advance is greater than that of the accompanying cyclonic depression. Description of the simple method of observation is added, and it is stated that more observers are still desired. Frank cards for mailing records will be supplied on application to the chief signal officer of the army, Washington.

— Mr. E. W. Maunder, assistant in charge of the spectroscopic work of the Royal observatory, Greenwich, is giving, in the current numbers of the *Observatory*, a paper on the motions of stars in the line of sight, as determined by spectroscopic methods. He remarks, that if the definition attributed to Bessel be a correct one, — that '*astronomy is the study of the movements of the heavenly bodies*,' — spectroscopy had no claim to be regarded as a branch of astronomy,

until Dr. Huggins obtained his first measure of the displacement of the *F* line in the spectrum of Sirius, and thus proved that it was possible to ascertain the speed with which the star was moving in the direction of the visual ray,—an observation which deserves to rank in importance with the first detection of the proper motions of stars, or the first determination of their annual parallax, or even somewhat higher as being more entirely a novel enterprise.

—E. Revillout, the French Egyptologist, has nearly completed an exhaustive report on the demotic documents in the British museum which have been discovered in the course of the destruction of some Coptic houses in Lower Egypt. These demotic *ostraka* include a great number of receipts for taxes, some being of the Roman period. Revillout points out that one of the demotic *ostraka* preserved in the Louvre is composed in exactly the same formula as those written in Greek during the second year of the reign of Caligula, and the thirteenth year of Nero. Other analogous examples are among those in the British museum. The most interesting of the *ostraka* submitted to Revillout are of the Ptolemaic period, amongst which occur several bilingual texts of considerable importance. One of these decides a great question about money; and another example is a receipt, payable in corn, of a kind up to the present time only known from the Greek texts, and demonstrating the validity of theories with regard to measures hitherto held as provisional only. Other *ostraka* in the collection record oaths taken about crops, the succession of property, and accusations of thefts from the catacombs, as well as a demand for the liberation of a slave, and an instrument for the delivery of certain property, the manner being recorded in which a house was left by its owner.

—The students of the Kansas State agricultural college at Manhattan are planning a natural-history expedition during the summer in the west. The field of their operations will lie between the 100th and 150th meridians.

—The report of the proceedings of the Reale academia dei lincei, Rome, as contained in *Nature*, cites Professor Tacchini's communication on the hydro-genic protuberances of the sun, observed at the Royal observatory of the college of Rome during 1884. In continuation of his previous note to the effect that 1884 must be considered as a year in which the phenomena of the chromosphere had attained their maximum development, he presented the results of observations on two hundred and forty-two days, from which it appeared that the number of the protuberances increased from March to October. In order to get rid of the anomalies which are met with in various observations, and to obtain a curve representing the course of the phenomena in the period 1880-84, Professor Tacchini has taken as monthly means the means of three months. The corresponding curve shows three culminating points, or periods of maximum activity: viz., July, 1880; September-October, 1881; and March, 1884,—which last is the highest in the whole series. The maximum of the protuberances follows that of the sun-spots; and recent observations

make it probable that the present year will be one of greater activity in the chromosphere and solar atmosphere.

—Prof. F. Jeffrey Bell will in future edit the *Zoölogical record*.

—Prof. H. L. Cohn, in his pamphlet 'Ueber den beleuchtungswerth der lampenglocken' (Wiesbaden, 1885) describes a long series of determinations of the relative values of various forms of lamp-shades. The method pursued was to measure the brightness of white paper lying on a table over which the source of artificial light was suspended at a given distance, by means of a Weber photometer. As one would anticipate, the general effect of a shade is to increase very greatly the illumination immediately under the light, and not modify it notably at an angular distance greater than forty-five degrees from this region. The last section of the pamphlet, which deals with the illumination requisite for easiest use of the eyes, is of the most general interest. Taking as a measure of the value of the illumination in this sense the number of lines which can be read from a newspaper in a minute, and as the unit of illumination that of a normal candle at a perpendicular distance of a metre from the paper, he finds that the best illumination is not less than fifty such units. Since even a fifth of this illumination is very rarely secured, except immediately under a lamp provided with a good shade, the author emphasizes the conclusion that few school-children work in a satisfactory light.

—The Swiss geologist and alpinist, Horace Bénédict de Saussure, the first to make the ascent of Mont Blanc (Aug. 3, 1787), is to have erected in his honor a statue in the village of Chamounix, from which point the ascent was made. It will be inaugurated on the centenary of his ascent. During the convention of the Alpine clubs at Chamounix year before last, the president of the section of the Jura, Vézien, called the attention of the alpinists to the fact that no statue in honor of the first of their number had yet been erected, and suggested that Chamounix was a suitable place for such a monument. This proposition was received with great applause; and, by a happy coincidence, at almost the same hour the president of the Swiss republic issued a decree authorizing the commune of Chamounix to accept a legacy of four thousand francs which had been made by a Mr. Chenal of Sallanches, according to a will drawn up as long ago as 1834. Mr. Chenal died in 1881; and the execution of his will has only now been accomplished. A committee has been formed to carry out the wishes of the legacy, which simply requires the erection of a monument in granite by some approved architect, with the inscription, 'À Monsieur Bénédict de Saussure, Chamounix reconnaissant.' This committee, which among others consists of Messrs. Daubrée of Paris, Alphonse Favre of Geneva, and the presidents of the Turin section and the Florence section of the Italian Alpine club, and the first president of the Austrian Alpine club, will endeavor to increase the sum, in order to erect a worthy monument. A subscription has been opened by the *Journal de Genève*, from which these facts are taken.